The Skills Mirror:

An Analysis of Trends, Tensions, and Opportunities of Proposed Projects to FSC

BIT

Contents

Executive Summary

The Behavioural Insights Team (BIT) analyzed nearly 900 project proposals submitted to the Future Skills Centre in late 2024. These proposals provide a unique window into Canada's skills development ecosystem, and our analysis offers a novel, data-driven understanding of how the ecosystem is conceptualizing and addressing the future of work. This report identifies 18 distinct clusters of proposals, five sets of overarching challenges, and six common sets of interventions proposed to address those challenges.

We anticipate that much of this content will be familiar and unsurprising to readers; indeed, many readers will have authored proposals we analyzed! However, the way the information is brought together will enable the ecosystem to better identify and discuss gaps and strengths in labour market innovations. Project proponents, including researchers, service delivery organizations, and educational institutions, can learn about how their work fits into a bigger picture - and how to differentiate and strengthen their approach. It will enable funders to reassess their strategies for future skills funding by examining how the structure of the funding calls contributes to those gaps and strengths in innovation.

Methodology

There were two key challenges in translating the set of proposals in the Future Skills Centre database into meaningful insight. First, the volume of data. Our dataset included 894 proposals, many dozens of pages in length. Second, the nature of the data. Our goal was to answer broad-based questions about what the sector is prioritizing and how they are tackling labour market challenges. However, the data (i.e., the proposals) were generated to respond to specific funding calls with timelines, budgets, and areas of policy focus.

To address the first challenge, we used machine-assisted methods for analyzing qualitative data. This included *topic modelling*, a machine learning method for grouping unstructured data into topics or themes based on patterns of semantic similarity. It also included using NotebookLM, a large language model tool that drew only for the proposal text, to facilitate finding more nuanced themes and examples.

To address the second challenge (and the limitations of machine-assisted analysis), we consistently applied more traditional, manual approaches to thematic analysis on the outputs of AI models to integrate the relevant context. More detailed information can be found in the [Methodology](#) section, below.

Findings

The proposals demonstrated broad and consistent engagement with issues related to equity, digital skills (especially AI), and addressing current and anticipated sector-specific skills gaps. These largely corresponded to the thematic focus areas identified for the funding calls. Nonetheless, some areas within scope for the funding calls were rarely addressed by proponents, including less broad and consistent engagement with issues related to system navigation, foundational skills, and employer / managerial practices.

Across the board, proponents prioritized community engagement strategies to understand problems, develop solutions, and evaluate interventions. Counterintuitively, we see gaps in engaging *powerful* stakeholders, like large employers, technology companies, and policymakers. We also see opportunities to deepen the nature of the engagement with users and communities, moving from consultation to co-design.

More broadly, we observed a tension between ambitious, systemic change-focused projects (e.g., developing new models for skills assessment) and implementation-focused training programs. The ambitious, systemic projects often lacked concrete implementation plans beyond the funding period, while the implementation-focused projects were often quite traditional in their design and delivery model. This tension can be explained by key parameters of the funding calls, particularly the tight timelines for project delivery (approximately one year).

The implications of the tight project delivery timeline also appear to extend to how proponents are thinking about the long-term, ongoing impact of their projects. We saw gaps in how systematically proponents are building sustainability plans and, more broadly, theories of changes. This was particularly evident for more innovative projects, many of which lacked a clear vision for institutionalization or other forms of scaling.

We identified important gaps in how proposals are referring to and building on existing evidence. For example, reference to systematic reviews and meta-analyses were very uncommon, while many projects included some form of literature review as an initial step. Taken together, we believe that many proponents may be inefficiently using resources by "reinventing the wheel" and basing their work on suboptimal and/or redundant summaries of the relevant evidence.

Throughout this report we identify opportunities for funders to address these gaps through the design and administration of funding programs. For example, we highlight how a "portfolio-based approach" could address the need for both longer-term funding to explore - and capitalize on - ambitious and innovative work (or work requiring longitudinal evaluation), and the need to mobilize resources to quickly address pressing skills gaps. Another category of recommendation relates to providing "technical assistance" to support some funding recipients to, for example, better leverage existing evidence, develop deep theories of change, and use innovative participatory approaches in intervention design.

Conclusion

We hope that this report sparks conversations across the skills and training ecosystem. By holding up a mirror to their work, we hope that funders and proponents can look at how their work fits into the ecosystem with fresh eyes. We have identified strong pockets of innovation and problem definition that can be further explored and leveraged, and we think we have identified important gaps that can ensure the next wave of projects supported by the Future Skills Centre represent a complementary evolution.

Context

This report presents an analysis of the approximately 900 project proposals received by the Future Skills Centre in late 2024. Collectively, these proposals represent a rich set of largely unstructured data that offers insight into:

- The central issues that the skills development sector is identifying;
- The interventions the sector believes are most valuable in addressing those issues; and
- How the sector develops and implements interventions.

This valuable data could help funders, policymakers, researchers, and a wide range of delivery organizations develop better, more aligned, and more informed labour market policy and programming. In this section of the report, we provide context related to the Future Skills Centre's mandate, the underlying data, and our goals for this analysis.

About Future Skills Centre

The Future Skills Centre (FSC) is a pan-Canadian initiative dedicated to driving innovation in skills development and training to help Canadians prepare for the future of work. Funded by the Government of Canada's Future Skills Program, it operates as an independent research and collaboration hub.

FSC's core mandate is to address the evolving challenges of the Canadian labour market, which are being driven by technological change, a shifting demographic landscape, and a transition to a greener economy. To accomplish this, the Centre focuses on three key activities:

Funding Innovation: FSC invests in and partners with a wide range of organizations—including employers, educational institutions, and non-profits—to design, pilot, and test new and innovative approaches to skills training and career development across the country.

Generating and Mobilizing Knowledge: It conducts research and evaluations to build an evidence base of "what works and what doesn't."

Fostering Collaboration: It connects people and organizations within the skills ecosystem through its events and convenings, encouraging the exchange of ideas and best practices.

The Data: Future Skills Centre's 2024 Funding Calls

The proposals that form the basis of our analysis in this report come from a series of funding calls issued by FSC in September-October 2024. The three main calls were titled: Driving Insights, Scaling Impact, and Skills Horizons. Driving Insights and Scaling Impact

were targeted calls available to previous FSC partners to build on their prior efforts. The Driving Insights call was aimed at knowledge mobilization, while Scaling Impact was - unsurprisingly - focused on scale. The Skills Horizons call was open to all organizations and included three streams: Designing Solutions (supporting early-stage concepts), Strengthening Outcomes (supporting well-defined initiatives conduct further testing and/or iteration), and Skills Research Projects (addressing knowledge gaps within FSC's key focus areas). There were also a small number of proposals received during this period related to other, smaller funding streams. Collectively, close to 900 proposals were received.

TABLE 1:
Summary of proposals included in the 2024 funding calls database

Funding Call	Number of Proposals Received	Budget Guidance
Driving Insights	37	$150,000 - $250,000
Scaling Impact	58	$1,000,000 - $1,500,000
Skills Horizons: Designing Solutions	268	$75,000 - $95,000
Skills Horizons: Strengthening Outcomes	374	$350,000 - $500,000
Skills Horizons: Skills Research Project	138	$50,000 - $250,000
Other Funding Calls	19	NA

The funding calls described above required projects to be completed by September 30, 2025. They also required that the projects align with strategic questions related to one or more of FSC's Focus Areas: Inclusive Economy, Pathways to Jobs, SME Adaptability, Sustainable Jobs, and Tech & Automation.

While the review process was not studied as part of this analysis, FSC ensured that each of these 900 proposals was reviewed by at least two reviewers using defined criteria. One of the two reviewers was external to FSC. Short-listed proposals were further reviewed by expert committees and the overall funding portfolio was reviewed to ensure diversity of funded projects (i.e. geography, focus area, populations, etc).

Key Challenges in Analyzing the Data

FSC commissioned this analysis in order to better understand the patterns across the proposals as a whole. In analyzing the proposals received by FSC, our goal was to offer a

rich and novel picture of key issues that the skills development sector has identified. We also sought to provide insight into the interventions (or change mechanisms) the sector believes are most important - and how those interventions should be developed and implemented. This valuable data could help funders, policymakers, researchers, and a wide range of delivery organizations develop better, more aligned, and more informed labour market policy and programming.

Before moving into our findings and analysis, we want to highlight two critical limitations:

1. **The proposals are not a perfect reflection of the sector's views and goals**. The timelines, focus areas, budget guidance, and other requirements set out in the funding calls, described above, shape the proposals. For example, issues that cannot be even partially addressed and interventions that cannot be advanced within a one-year project timeline would not be represented in the data. The proposals are also not fully representative; while a diverse set of about 300 Canadian organizations applied for funding, this is not comprehensive of all relevant organizations. Further, they are *proposals*, documents aimed at securing funding - not objectively describing future skills needs and opportunities.

2. **There is so much data, and so much heterogeneity in the data, that sense-making is very challenging.** The nearly 900 proposals were submitted by hundreds of organizations, each of whom used their own language and brought their own concepts and experience to the documents they drafted. Given this variation and the large volume of data, it is simply not possible for any individual or group of individuals to economically review, code, and meaningfully synthesize the entirety of this corpus with accuracy, depth, and nuance.

Over the course of several months, the Behavioural Insights Team (BIT) worked with FSC to navigate these limitations and generate meaningful, usable insight. To address the second challenge - the volume and diversity of content - we used two machine learning / AI-assisted approaches. We describe our methodology in the following section. Addressing the first challenge was even more challenging. We reviewed the outputs of our analysis critically, asking (and trying to answer) how the nature of the funding calls and proposal context requires us to read the findings differently.

Our hope is that others will continue this work, critically engaging with the outputs and analysis we offer in this report, and strengthening them with their own expertise and experience. While we have offered thoughts on what the data mean for the sector, **we see this project as offering a new and important set of data for the ecosystem of funders, researchers, and service providers to engage with**, not a prescriptive set of recommendations. For example, project proponents can use this data to generate ideas, identify ways to differentiate their proposals, and see how their peers are adopting innovative approaches to their work.

Methodology

We used a combination of machine-assisted and manual methods to conduct a content analysis of the proposals. The machine-assisted methods were critical to the feasibility of the approach, as manual methods for content analysis would not be economical or practical at this scale of data. Our methods included topic modelling, AI-assisted summaries of selected content using software called NotebookLM, and traditional (manual) thematic analysis. An overview of these methods is provided below.

Topic modeling is an unsupervised machine learning technique used to uncover semantic patterns within text. As it is unsupervised, it does not rely on pre-labelled datasets or predefined codebooks. Instead, it groups excerpts of text into "topics" based on semantic similarities and labels these topics using key words and phrases that sit at the centre of the similarities.

We applied topic modeling to the "project summary" sections of each in-scope proposal, using the BERTopic analysis package for Python.[1] This covered 625 proposals, as the remainder did not have a project summary section. The topic model clustered the proposal extracts as described above, then BIT staff conducted a manual review to interpret the resulting topics (i.e., clusters). This manual review was critical to 1) make sense of each topic, clarifying the similarities the model had identified across the extracts, and 2) fine-tune the parameters we used in the topic model (e.g., the minimum number of extracts that could comprise a topic). To ensure this sense-making and validation was robust, we had multiple BIT staff independently review the extracts grouped within each topic and summarize the topic in a short description. Then, these independent descriptions were consolidated into the consensus descriptions used in this report (see "What did the ecosystem propose in 2024?", below).

To develop deeper insight into the proposals after developing the topic model, we used a product called NotebookLM, which is a large language model (LMM)-style AI tool developed by Meta that enables people to summarize and interrogate large sets of documents. Unlike general purpose LLMs like ChatGPT, Gemini, or Claude, NotebookLM only uses information from the documents you provide it (in this case, the proposals). This significantly reduces the risk of unrelated or inaccurate information informing the analysis and ensures that none of the data used is accessible to other users outside the project team.

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[1] We selected the "Project Summary" section because it was required and available across all proposals. For each summary, proponents were instructed to describe the challenge they sought to address, their planned approach and key activities, their objectives, their expected outcomes or impacts, and any additional details specific to the funding call such as knowledge mobilization strategies or key audiences.

We created a series of NotebookLMs (Notebooks) to help us explore the proposals. One Notebook included all 894 proposals, while others included only the proposals for a given topic or related to a specific labour market challenge. We would ask the Notebooks open-ended questions like, "What are the most prominent models for employer engagement in intervention design across the set of proposals? Provide references to illustrative examples of each type of model." We would then use the source citations it provided to validate and refine the analysis the Notebook produced.

The Notebook functionality was critical in going beyond the "what" elucidated by the topic model, to the "how" and "why." As described above, all machine-assisted outputs were manually reviewed using traditional **qualitative thematic analysis** for validation and sense-making. Our general approach across all the traditional thematic analysis was to have multiple BIT reviewers independently code, review, or interpret extracts, as relevant. The full analysis team would then meet to discuss the findings and reach consensus. The themes were then consolidated and defined to produce the final output.

Findings

What Did the Ecosystem Propose in 2024?

FSC received almost 900 funding proposals in late 2024. The resulting database offers a unique and compelling lens into core needs and opportunities in Canada's future skills ecosystem. We acknowledge that the proposals were submitted to align with FSC's focus areas, so they naturally reflect those issues. To start drawing insights from this database, BIT applied a *topic modelling* approach to the project summaries of the proposals. This machine learning approach identified 24 distinct "topics" or categories of proposal that collectively included 408 of the 894 proposals.[2] As noted in the Methodology section, topic modelling works by identifying semantically similar patterns of text and clustering excerpts together accordingly into "topics."

FIGURE 1:
"Raw" topic model output

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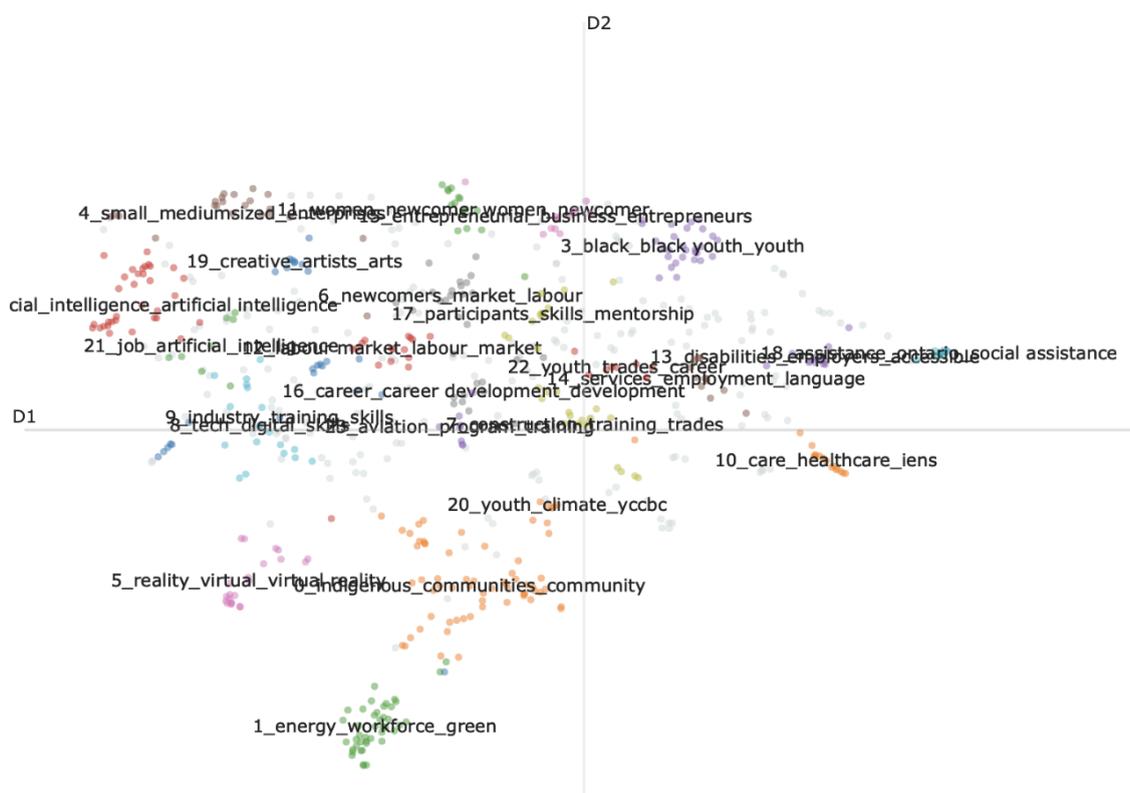
[2] 269 proposals were omitted because they did not have a project summary. We also set a minimum topic size of 6 proposals, meaning that not all proposals were captured under one of the 24 topics. This excluded an additional 217 proposals.

In Figure 1, above, you can see the "raw" output of the model. Each dot represents a proposal, and the colour of the dot indicates which "topic" it is in. The labels for each topic are automatically generated based on the key words that represent the semantic "centre of gravity" that the topic is clustered around.

While interesting to look at, the raw output does not facilitate interpretation. To understand the similarities - and the topics - that the model identified, BIT manually reviewed the extracts in each topic. We used this process to replace the automatically generated labels with more meaningful descriptions of each topic. We also consolidated topics with substantial overlap, and cut some that lacked meaningful cohesion, reducing the number of topics from 23 to 18.[3]

In Table 2, we provide our resulting descriptions of each topic and the number of proposals in that topic. Note that the topic modelling method assigns the extracts to only one topic, even though many proposals could arguably fit into multiple categories.

TABLE 2:
Refined outputs from the topic model for the 2024 proposals

#	Topic	No. of proposals
1	Addressing training gaps and barriers to employment for Indigenous communities	56
2	Using experiential learning and training to build a talent pipeline for youth and to strengthen career pathways for Black youth in particular	49
3	Upskilling for a net zero economy	42
4	Building comfort and skills with AI to increase productivity and prepare future workers	33
5	Expanding service offerings to support newcomers to participate in the labour market	28
6	Using virtual and mixed-reality technology to bridge gaps in skills-based occupational training	21
7	Identifying practical and effective ways for small and medium sized enterprises (SMEs) to build hiring, recruitment, and training capacity	21
8	Facilitating labour market resilience through digital skills	17
9	Increasing recruitment, retention, and representation in the skilled	17

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[3] By removing incoherent topics, the number of categorized proposals decreased from 408 to 388.

#	Topic	No. of proposals
	trades	
10	Strengthening workforce readiness in the bioeconomy sectors	16
11	Increasing pathways to leadership for women through education, training, and networking	14
12	Equipping internationally-educated and unregulated healthcare workers with the skills to secure positions and provide high quality care	14
13	Developing new ways to leverage labour market information (LMI) to facilitate program planning and career services	14
14	Facilitating employment for people with disabilities through training, connection to employers, and employer-focused resources	12
15	Fostering entrepreneurship as a pathway to economic mobility for newcomers and marginalized groups	10
16	Helping social assistance recipients find stable work	9
17	Understanding the needs of creative workers to develop recommendations and resources	8
18	Developing skills and certifications for the transportation sector	7

Again, we acknowledge that the topics are largely in concordance with FSC's focus areas. In reviewing the 18 topics, we identified four overarching categories:

- **Equity and inclusion** (six topics, 168 proposals);
- **Sector-specific challenges (e.g., skills gaps)** (six topics, 104 proposals);
- **Digital and data**: (four topics, 85 proposals); and
- **SMEs and entrepreneurship** (two topics, 31 proposals).

In the remainder of this section, we describe the topics in each category, then conclude with discussion prompts, analysis, and some key context to keep in mind.

Topic descriptions

The following descriptions are based on a manual review of the extracts within each topic. Multiple reviewers independently reviewed each extract and developed a candidate description for each topic. After discussing the candidate topics as a team, a senior researcher consolidated these into a final definition and name.

Equity and inclusion

The model identified six topics focused on building equity and inclusion in the future of work, reflecting FSC's commitment to addressing systemic barriers and creating more inclusive job pathways.

Topic	Description
Addressing training gaps and barriers to employment for Indigenous communities *Topic #: 1* *Number of proposals: 56*	These proposals aimed to address critical needs and gaps in Indigenous workforce development. Key priorities included increasing workers that serve the needs of Indigenous communities, reducing barriers to Indigenous workers accessing and maintaining meaningful employment, and incorporating Indigenous ways of knowing into existing training programs. There is a strong intersection in this topic with the needs of youth, demonstrating how employment gaps and barriers are shaped by intersectional factors.
Using experiential learning and training to build a talent pipeline for youth and to strengthen career pathways for Black youth in particular *Topic #: 2* *Number of proposals: 49*	This topic centred on youth employment, with an emphasis on improving labour market access for underrepresented groups of youth; in particular, Black, Indigenous, newcomer, and rural youth. Proposed initiatives focused on developing skills, fostering employment readiness, and connecting youth to the labour market through experiential learning opportunities, like summer placements. These projects were generally tailored to the local context, included touchpoints with employers or community organizations, and included broader support (e.g., wraparound services) to address structural barriers to participating in upskilling programs. Many of the projects focused on Black youth. Some of these proposed fundamental research into barriers that other initiatives should address, but the majority focused on delivering or scaling specific programs. These programs often incorporated mentorship and emphasized the need for culturally responsive interventions.

Topic	Description
Expanding service offerings to support newcomers to participate in the labour market *Topic #: 5* *Number of proposals: 28*	These proposals primarily aimed to address employment barriers faced by newcomers by increasing employer and service provider capacity to serve this group. For example, developing a tool for employers to meet the needs of newcomers in the workplace or creating a network to enhance service provider collaboration with the intent to simplify service navigation. A subset of proposals in the topic focused on jobseekers directly, looking to include upskilling in other services they might be using. For example, some intended to integrate language training and job coaching into existing settlement and social services. Others included intensive training delivery addressing language, employability, and technical skills in an integrated delivery model.
Increasing pathways to leadership for women through education, training, and networking *Topic #: 11* *Number of proposals: 14*	These proposals focused on improving gender equity in leadership positions by equipping women with leadership skills and networks (e.g., through leadership skills webinars and peer learning sessions) and by shifting employer practices (e.g., teaching executives about gender equity in advancement). Specific proposals included leadership skills webinar and peer learning sessions. Some of these proposals further targeted specific sub-groups such as South Asian women or women-led SMEs in specific sectors.
Facilitating employment for people with disabilities through training, connection to employers, and employer-focused resources *Topic #: 14* *Number of proposals: 12*	This topic's proposals aimed to reduce unemployment and underemployment among people with disabilities by providing direct skills training and by engaging employers. Employer engagement focused proposals aimed to either 1) enhance employer capacity to hire and retain workers with disabilities (e.g., through training or development of accessible career assessment tools) or 2) provide direct employment opportunities through experiential training programs or supportive work placements. There was a sectoral focus here as well, with most training focused on the skilled trades and digital or technology-focused roles.

Topic	Description
Helping social assistance recipients find stable work *Topic #: 16* *Number of proposals: 9*	Proposals under this topic highlighted how existing upskilling models are ineffective for social assistance recipients, particularly in failing to address pre-employability needs and in focusing on the wrong types of jobs. To address these gaps, they proposed developing, testing, and scaling programs that improve employment readiness and smooth transitions into the labour market.

Sector-specific challenges (e.g., skills gaps)

Six topics were identified related to sector-specific workforce needs, generally current or projected skills gaps. The proposals focused on the green economy, skilled trades, the bioeconomy, healthcare, creative industries, and transportation. Beyond the sectoral focus, these topics tend to focus on tightening the link between training design and employer needs.

Topic	Description
Upskilling for a net zero economy *Topic #: 3* *Number of proposals: 42*	In response to Canada's net-zero commitments, many proposals focused on preparing the workforce for emerging jobs in the energy sector, including roles in the electric vehicle supply chain and green energy production. Proposed initiatives focused on identifying workforce needs, mapping these to in-demand skills, or providing targeted training to workers, including reskilling and upskilling initiatives. Often these involved employers and industry partners, working with them to understand workforce needs or to co-design and implement training opportunities, such as work-integrated learning (WIL) or job placements. In some cases, employers were the primary audience or beneficiaries of a new tool or framework.
Increasing recruitment, retention, and representation in the skilled trades *Topic #: 9* *Number of proposals: 17*	These proposals address recruitment and retention challenges in the skilled trades, particularly in the construction sector. They propose research to identify gaps in existing training as well as the development and delivery of programs that address these gaps. They often propose technology-enabled solutions (e.g., virtual recruitment and training) to expand access to apprenticeships and facilitate experiential learning. There are intersections with equity and inclusion, as several proposals focus on recruitment and retention strategies for equity-deserving groups.

Topic	Description
Strengthening workforce readiness in the bioeconomy sectors *Topic #: 10* *Number of proposals: 16*	This topic responds to the projected and current labour shortages in Canada's biomanufacturing, automation, and agri-food sectors. The proposals emphasize the need for skills training and defined career pathways, further highlighting the importance of industry-validated, hands-on technical training to better align workforce development with employer needs.
Equipping internationally-educated and unregulated healthcare workers with the skills to secure positions and provide high quality care *Topic #: 12* *Number of proposals: 14*	Ongoing labour shortages for nurses and long-term care workers prompted a group of proposals to support workers currently in unregulated caregiving roles and internationally educated nurses (IENs). Proposals focused on skills gaps needed to move into regulated nursing and long-term care roles. For those currently in unregulated caregiving, they focused on training to support medically complex patients and system navigation. For IENs, these skills include Canadian cultural competencies and skills specific to licensure. Proposed initiatives generally focused on flexible, accessible, and holistic support models. These include accessible training for caregivers, assisting IENs with securing training and upskilling, bridging programs, and career planning assistance.
Understanding the needs of creative workers to develop recommendations and resources *Topic #: 17* *Number of proposals: 8*	These proposals aimed to support creative industries and workers in Canada by conducting research on the labour market experiences and challenges of creative professionals. For example, one proposal suggested mapping desired competencies from non-creative employers onto the skills of creative professionals to facilitate employability.
Developing skills and certifications for the transportation sector *Topic #: 18* *Number of proposals: 7*	This cluster of proposals aimed to address workforce shortages and skill development gaps in the aviation, aerospace, and trucking industries. The primary mechanism was training that would enable certification, and there was a common focus on equity-deserving groups.

Digital and data

The topic model identified four clusters of proposals focused on the role of emerging digital technologies and the innovative use of data. Collectively, these proposals aim to increase both the development and uptake of emerging technologies, as well as more consistent use of data across system actors.

Topic	Description
Building comfort and skills with AI to increase productivity and prepare future workers *Topic #: 4* *Number of proposals: 33*	Across proposals, AI is positioned as a cross-cutting solution that can address the needs of current workers and prepare them for the future. Proposals in this topic aimed to socialize employer and worker communities to the potential of AI, especially generative AI. The proposals varied in target populations and sectors, gaps and issues to be addressed, and the proposed activities. However, there was a consistent focus on increasing the uptake of AI for groups and populations with low comfort, including SMEs and underrepresented groups.
Using virtual and mixed-reality technology to bridge gaps in skills-based occupational training *Topic #: 6* *Number of proposals: 21*	This topic centred on using virtual reality to deliver more effective and/or inclusive training. Virtual reality and mixed-reality simulations offer the opportunity for "hands on" training in environments - like mining - where that is otherwise dangerous or inaccessible. Simulations are described as supporting equal access to training by reducing disparities in access to high quality placements and to expensive training facilities or equipment.
Facilitating labour market resilience through digital skills *Topic #: 8* *Number of proposals: 17*	Proposals under this topic generally focused on building digital skills to increase adaptability and resilience in the context of shifting labour market demands. The digital skills training was frequently paired with instruction in "soft skills" (e.g., collaboration, communication, leadership), and a significant minority of the proposals included the use of AI tools in the learning experience. There was also a prominent "sub-topic" related to building the competence of *educators* in the use of emerging technology in the classroom. As we see across topics, quite a few proposals in this topic prominently aim to address equity challenges (e.g., digital skills training for newcomers and women).

Topic	Description
Developing new ways to leverage LMI to facilitate program planning and career services *Topic #: 13* *Number of proposals: 14*	While the first three topics in this cluster focus on technology, this topic is at the intersection of labour market *data* and technology. These proposals responded to a need for improved LMI tools for program development, career service provision, and employee training. They aim to leverage technology solutions, generally dashboards and platforms, to present and customize LMI to meet employer and worker needs. On the jobseeker side, solutions propose developing new tools that analyze labour market trends and help identify where demand for workers is high. On the employer and policy side, projects aim to make data-driven insight more accessible for decision-making purposes.

SMEs and entrepreneurship

The smallest category - both in number of topics and proposals - reflects FSC's focus area of "SME adaptability." These proposals explore practical strategies to help SMEs and entrepreneurs build capacity, offer workplace training, and foster innovation.

Topic	Description
Identifying practical and effective ways for SMEs to build hiring, recruitment, and training capacity *Topic #: 7* *Number of proposals: 21*	SMEs face unique challenges in attracting skilled workers, investing in employee training and upskilling, and in adopting and developing innovations given their resource constraints. To address these challenges, proposals sought to understand the needs of SMEs, identify effective practices, or evaluate a new program or tool. A smaller number aimed to deliver or scale up specific upskilling interventions, like training programs.
Fostering entrepreneurship as a pathway to economic mobility for newcomers and marginalized groups *Topic #: 15* *Number of proposals: 10*	This topic frames entrepreneurship as a pathway to economic mobility for newcomers and marginalized groups. The proposals include training programs to develop entrepreneurial skills and mentorship / networking initiatives to build the connections and soft skills that enable success.

Discussion Questions and Context Considerations

The topics generated by the model offer valuable insight into the recent thinking, priorities, and issue framing of about 300 organizations in the future skills ecosystem. We invite funders, delivery organizations, researchers, and policymakers to reflect on the following questions:

- Which issues or topics would we have expected to see more or less of?

- To what extent does the summary reflect emerging or novel challenges or ways of defining them?

- Is the relative size of the topics surprising? Would you expect to see a relatively greater or lesser share of the proposals in a given topic?

- Overall, what do you take away from this machine learning-assisted approach to consolidating and analyzing the unstructured data from these proposals?

In answering these questions, there are a few key elements of context we recommend keeping in mind. First, the parameters of the funding calls, including the limited timelines for funded projects and the budget guidance, were fundamental inputs into the proposals received (see "The Data: Future Skills Centre's 2024 Funding Calls", above, for more information).

The proposals were also influenced by the specific labour market context in late 2024. Key elements of that context include:

- **Immigration policy shifts:** Significant reductions in immigration levels, especially among college and university students, impacted the supply of labour, priorities for newcomer integration, and the financial outlook of postsecondary institutions.

- **Commitments to net-zero and clean growth:** Ongoing federal and provincial priorities around decarbonization were driving current and anticipated demand for new skills.

- **Paradigm shift with generative AI:** The rapid and massive growth of generative AI technologies engendered a sudden shift in the skills landscape (e.g., the need to be able to understand and use these technologies) and opened novel opportunities to generate and deliver upskilling content.

- **Uncertainty in our most important trading relationship:** The US election was in full swing when these funding calls were issued, and the successful candidate had a very disruptive view on the US trade relationship with Canada.

In the following sections, we dig deeper into the proposal database to draw out the challenges that underpin each topic and the interventions and approaches that the sector is

proposing to address those challenges. In each section, we suggest further discussion prompts, and layer in our own hypotheses.

What Challenges and Issues is the Ecosystem Focused on Addressing?

To generate more insight from the topic modelling (and the underlying database of proposals), we identified the underlying labour market challenges and issues implicit in the topics. To do this, each member of the research team independently listed the challenges they felt were most prominent across the topics, then we achieved consensus on a consolidated list. Overall, we identified five high-level challenges that the ecosystem prioritized addressing, listed in descending order of how many proposals addressed them:

1. Inequitable access to skill development and labour market opportunities
2. Industry-specific skills gaps created by economic transitions
3. Systemic gaps in adopting and effectively using AI
4. Difficulty recruiting and retaining skilled workers
5. Limited use of labour market information

For each challenge, we used an LLM (NotebookLM) that *drew exclusively from the database of proposals* to develop more nuanced insight.[4] We prompted the LLM to describe who the challenge focused on, what the challenge was (i.e., how it was defined and articulated), and why the challenge was occurring (i.e., its causes). We then reviewed all the outputs of the LLM manually, tracing key references back to the original proposals to provide quality assurance.

Inequitable access to skill development and labour market opportunities

A majority of proposals had a material focus on addressing inequitable access to skills development and job opportunities among Indigenous peoples, racialized youth, newcomers, people with disabilities, and women in particular. While the proponents could cite gaps in practice that would justify this service delivery, FSC's mandate is to test and build evidence, not specifically to deliver services. The proponents highlighted three specific dimensions of this complex and cross-cutting challenge:

1. Barriers related to cultural relevance and accessibility. Proposals emphasized limited access to *culturally relevant training and support resources*. They noted how current systems and programs often fail to reflect Indigenous values and ways of knowing. As one proposal noted, current training programs are "lacking cultural relevance to [Indigenous] values and knowledge systems, thus failing to engage students". Similarly, training and resources are often designed with assumptions about users' abilities, excluding people with

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[4] This component of our approach looked at all the proposals in the database, not just those in the topic model.

disabilities. One proposal observed that "the inaccessibility of career assessment tools, many of which rely on visual elements such as images or graphics [...] reduces autonomy in career decision-making and limits the effectiveness of career counseling services." Many proposals proposed to close these gaps through design and/or delivery of improved training programs.

2. Barriers to participation in high-demand career and entrepreneurial pathways.
Proposals zeroed in on barriers that limit the participation of equity-deserving groups in sectors with high current or anticipated demand. The cited barriers included: limited access to mentorship and networking; lack of support from employer leaders and executives; and exclusion from funding opportunities for entrepreneurs. Proposals often attributed these issues to deeply rooted, systematic factors including racial and gender-related discrimination, low knowledge of cultural differences, and low awareness of labour market opportunities among equity-deserving groups.

3. Non-recognition of prior credentials and experience. Several proposals identified policies and practices that actively constrain labour market access for newcomers and immigrant professionals. They note how longstanding limitations in foreign credential recognition mean that highly skilled individuals end up underemployed, often in precarious, low-wage jobs. Proponents suggest these challenges stem from language barriers, difficulties in presenting international experience in ways that align with Canadian workplace competencies, and the complexity and cost of licensure and credentialing systems.

Together, these barriers reinforce cycles of exclusion that limit economic mobility for equity-deserving groups, reduce diversity of Canada's workforce, and prevent employers from fully accessing the skills and talent needed for long-term growth.

Industry-specific skills gaps created by economic transitions

Many proposals focused on the growing challenge of industry-specific skills gaps, particularly in terms of the transition to a more environmentally sustainable economy (e.g., using terms like "green economy," "net-zero economy," and "bioeconomy"). Employers in these industries often report difficulty finding workers with the technical skills or experience required to meet evolving needs. Proposals consistently identified several key contributing factors:

- **The rapid pace of technological change.** As one proposal stated, "The accelerating pace of technological change and automation has exposed a critical gap in workforce skills. Traditional training approaches are not keeping pace with industry demands, particularly in aligning technical expertise with soft skills development."
- **A fragmented training ecosystem.** Canada's skills-training system is described as "complex and diffuse" and "deeply fragmented," involving multiple levels of government, career service providers, employers, and postsecondary institutions.

Proponents note how limited coordination across these actors makes it hard to know what skills are in demand and what training approaches are effective (i.e., where pockets of evidence and innovation occur, they are not broadly mobilized).

- **Limited detail on the specific skills gaps that need to be addressed.** One representative proposal notes a "lack of research quantifying current and future labour and skills gaps," leaving employers and policymakers without a clear picture of where shortages are most acute.
- **Limited resources to invest in training, particularly among SMEs.** Proposals note that some firms, particularly SMEs, lack the resources and capacity to invest in the upskilling and reskilling.

Proposals also recognized the disruption being experienced in traditional pillars of the Canadian labour market, including the manufacturing, automotive, and oil and gas sectors. They describe how economic, technological, demographic, and policy shifts have created an imperative for reskilling and upskilling the current workforce. Proposals highlight the following specific drivers of this imperative:

- **Global competition and shifting trade policies.** For example, one proposal notes that the manufacturing sector is contending with "extreme global competition with a critical need to upskill its workforce in the face of rapid and massive technology disruption."
- **The net-zero transition.** Policy and economic shifts are requiring resource-dependent communities and occupations to "proactively facilitate employment transitions to sustainable jobs."
- **An aging workforce.** A handful of proposals note that overall workforce aging, and in particular a high rate of retirement in the skilled trades and the forestry sectors, are compounding the need for upskilling created by economic transitions. In the skilled trades, one proposal suggests that this problem is exacerbated by a "shrinking flow of new workers" as fewer high school graduates choose apprenticeships or trade schools, labour supply decreases in this sector.

Systemic gaps in adopting and effectively using AI

Overall, the proposals see AI as being a transformational force in Canada's labour market. Although there is some concern about understanding and responding to the disruptive effects of AI on specific sectors, proponents were generally optimistic about the potential for AI to increase productivity and solve a range of issues across almost all industries and types of organizations. There was a strong focus on encouraging business adoption of AI.

These proposals identify a critical challenge in building AI adoption and skills at both the employer and worker levels. Proposals note low confidence in using AI among workers, limited training in the use of AI, and the particular challenges faced by SMEs. One proposal proponent notes how SMEs "lack the resources to 1) properly train their staff and

themselves to use AI safely and effectively 2) leverage AI tools to increase productivity of the business." They suggest that these gaps are due to the rapid pace of AI developments, which is outpacing employers' ability to create the tools, resources, budget and training needed to meaningfully and effectively integrate AI into workflows and training programs.

Difficulty recruiting and retaining skilled workers

Related to the challenge around industry-specific skills gaps, proposals frequently referenced widespread difficulties in recruiting and retaining workers, especially in the skilled trades, and in the oil and gas, aviation, and transportation sectors. Employers in northern and remote regions, as well as SMEs (across industries), were also frequently mentioned in this context. However, when we examined the proposals in more depth, we found limited detail or consistency in describing the causes of these challenges. They often used quite general language about a limited flow of new workers, low willingness to relocate, or an aging workforce. There was significant attention on the gaps between the skills being produced in post-secondary institutions and those needed by employers, especially in STEM fields and construction. Several proponents observed a lack of both technical and practical competencies among new graduates. As one STEM-focused proposal articulated, "these [skills development] systems are typically rigid in curricular design, limited in interdisciplinary collaboration, theory-heavy, and disconnected from real-world applications. This leads to a skills gap that affects students, employers, and community, resulting in graduates and employees who are not fully prepared to address complex, real-world problems."

Recruitment and retention challenges appear particularly acute among SMEs, given that they generally have more limited financial resources and leaner organizational structures. One proponent noted the "cost of the training, time investment, and not having the ability to access readily available training material in a format that is easily digestible." Several proposals noted how SMEs view the time and resources diverted from day-to-day operations for training as "opportunity costs," and how limited formal HR capacity makes effective recruitment strategies and training plans, which are seen as important contributors to retention, less common.

Insufficient access, understanding, or uptake of relevant labour market information

Proposals highlighted how employers, workers, and career services providers all face challenges accessing relevant and reliable labour market information (LMI).

The proponents suggest that **employers** require precise and timely LMI to support long-term workforce strategies, including investments in future skills and efforts to address workplace inequities. A representative example comes from a proposal noting the lack of "insights on in-demand skills, labour mobility, and wage data." The proponents also point to equity-related impact, noting that current data "does not provide sufficient detail about

specific populations at the level of disaggregation required to inform programming [e.g., inclusive workforce strategies]." Additionally, even when such data is available, one proposal states that the complexity of this data leaves business leaders "unclear about [LMI's] value for strategic decision-making."

Proposals note that **workers** often lack access to, or struggle to interpret LMI that could inform their career pathways. As one proposal explained, "job seekers struggle to find relevant, accurate, and understandable information that they can trust that also provides context for their lives." Without such information, workers are less able to align their skills development with employer needs. For example, one proposal noted that access to detailed LMI is critical for workers in the humanities and social sciences to "successfully transition into the rapidly evolving cognitive computing and AI labour market." The proposals further highlight the challenges in understanding using LMI when it is available, with one noting this often "requires significant expertise and effort."

Similar sentiments were expressed in the use of LMI by **employment and career service providers.** One proposal notes that career development practitioners are often constrained by "subjective or outdated data [which] limits effective career planning and job matching". Overall, the proposals framed the lack of engagement with LMI as reducing their ability to guide job seekers to pursue training and upskilling opportunities that match industry demands.

Discussion Questions and Context Considerations

We recognize that virtually all these challenges will be very well known to readers of this report. They are the sector's own thoughts synthesized and shared back with them. To generate insight from this list of challenges, it's worth considering what is *not* included and why. This is a conversation that would benefit from a wide range of perspectives, as it requires a normative view of what challenges *should* be addressed. However, we have developed a few initial hypotheses to seed the discussion.

For example, we see limited reference to some of the *broader societal challenges,* like increased cost of living and income inequality, that reduce opportunity for some workers and employers to invest their time and money into activities that promote long-term labour market resilience. While firms and individuals facing significant financial pressures may recognize the value of things like training in soft skills, increasing workplace wellbeing, or exploring the next generation of technology - the immediate need to make ends meet may effectively rule out investment.[5]

We also see limited reference to challenges related to *management practices and competencies* that could help employers more regularly and effectively engage in

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[5] There are some notable exceptions to this, discussed in the following section, where programs are addressing underlying affordability challenges through wraparound supports and other measures.

longer-term planning, strategic partnerships, and improving workplace wellbeing. Similarly, we see limited reference to the policy and administrative requirements that can make system navigation challenging for jobseekers and vulnerable workers. We do not see any topics or prominent themes addressing the burdens related to finding out about services, applying for services, and onboarding onto them, which both reduce service uptake and create a "time tax" on people whose bandwidth is already stretched thin.

In reviewing the proposals together with FSC experts, we noted that many organizations proposed knowledge development activities to address gaps in evidence that appear to be of marginal value. Despite claims to be addressing emerging issues, many proposals did not appear novel or boundary-pushing. They stayed within relatively defined boundaries, injecting existing programs with a dose of AI, for example, rather than reimagining a program top to bottom. (We also noted that many proposals struggle to articulate the existing evidence base for their proposed activities and where those gaps were, specifically).

The database of proposals contains somewhat limited acknowledgement of the challenge related to *gaps in foundational soft skills* that can build long-term labour market resilience among workers. These skills include numeracy and literacy, critical thinking, communication, collaboration, and adaptability.[6] On the other hand, we see technology dominating much of the discussion, especially focused on addressing gaps in AI readiness. This juxtaposition points to a broader tension between addressing immediate needs, like skills gaps and unfamiliarity with rapidly emerging technologies, like AI, and longer-term needs. We hypothesize that technological issues, such as data platforms and AI, are seen as more future-forward and many nonprofits and academic organizations were seized in 2024 with the need to remain relevant to a rapidly changing technology landscape.

We are **not suggesting that the ecosystem is unaware of these challenges** related to foundational skills, affordability and inequality, or management practices **or uninterested in addressing them**. Instead, we believe that the structure of the funding calls, and particularly the short timelines for funded projects, has created a significant barrier. We do believe the sector needs to improve its use of evidence and knowledge, with explicit support for organizations to integrate knowledge and build new proposals upon that basis. To address this, we would recommend that funders consider a "portfolio approach" to funding calls, with limited timelines in some calls to address pressing and simpler needs, and complementary calls with extended timelines to address more ambitious, cross-cutting and complex challenges like those described above This would obviously require funders

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[6] In a manual review of projects funded in earlier FSC calls (2020-2023), gaps in soft skills and related competencies were quite prominent. Further, quite a few of the proposals in our database did mention *interventions* that include soft skills development, but this was much less prominent as an overall *gap* in Canada's current future skills outlook.

themselves to have longer timelines and greater capacity to manage multiple calls on a rolling basis.

How is the Sector Proposing to Approach These Challenges?

In this section of the report, we assess *how* proponents are proposing to address the challenges. This includes the specific types of labour market interventions they are developing, and how they planned to develop and implement them. The primary methodology for this was to interrogate a NotebookLM built on the full database of proposals, then manually trace and validate key references (see [Methodology](#), above). For example, we started with general prompts such as, "What are common elements in how people are developing their projects or achieving their project aims?" After reviewing the outputs and key extracts referenced by the model, we followed up with more specific prompts like, "Of the projects that used participatory methods, how was each stakeholder group engaged?" to surface relevant detail. We used Notebooks specific to subsets of proposals (e.g., all those within a specific topic area) when needed to get to a more focused set of results.

What types of interventions did applicants propose?

Our methodology identified six common, high-level categories of intervention. Projects often involved a combination of these interventions. From most frequent to least, they were:

1. Conducting research and developing knowledge products
2. Developing new training programs and curricula
3. Offering mentorship, counselling, and coaching programs and services
4. Adapting and scaling existing training programs
5. Developing "infrastructure" for training (e.g., platforms and hubs)
6. Building sectoral "infrastructure" (e.g., new models, frameworks, or networks)

1. Conducting research and developing knowledge products

These interventions addressed FSC's research and evaluation priority, with projects focused on generating evidence and creating knowledge products. The primary outputs of this category were generally reports, policy recommendations, or frameworks. These projects spanned a wide range of topics and methods, but the most significant cluster was around understanding broader labour market or sectoral trends. For instance, several projects focused on analyzing LMI to inform strategic planning (e.g., forecasting workforce needs) or conducting research to understand the impact of new technologies on the skills ecosystem, workforce, or a specific sector. Other projects focused on evaluating specific systems, policies, or programs, typically with the aim to develop generalizable learnings for a particular audience (e.g., policy recommendations or roadmaps for decision makers, resources and best practices documents for employers and workers).

2. Developing new training programs and curricula

The largest cluster of non-research interventions featured the development and delivery of training curricula or programs, including in-person, digital, and hybrid formats. Within this category, we identified seven subsets of training programs:

- **Digital and technology-related skills**, with representative topics including learning to navigate AI, coding, UX design, and technician training.
- **Green jobs reskilling or upskilling,** like helping heavy-duty diesel mechanics transition to work on electric vehicles.
- **Skilled trades and construction,** such as foundational construction skills and safety certifications.
- **General employability skills,** which included essential workplace competencies (e.g., business communication, organizational skills, customer service), soft skills like communication and conflict resolution, and career readiness. Proposals aimed at groups with higher barriers to labour market attached tended to also offer broader life skills training, including self-awareness and financial literacy.
- **Entrepreneurial skills,** such as training focused on business planning, financial management, marketing, and scaling strategies
- **Highly individualized programs, often including wraparound services**, such as providing psychosocial and material supports (e.g., case management, settlement assistance) tailored to individuals' unique barriers to economic integration as part of a larger entrepreneurship training program
- **Professional capacity building,** which included training for: managers, leaders, and decision-makers; educators, trainers, and facilitators; career / employment services practitioners, and related service providers, such as settlement workers or job developers.

These proposals are generally differentiated from each other in terms of the skills they aim to develop and the populations they serve. We found limited differentiation or innovation in the fundamental model for training delivery, except for using AI. This general alignment to traditional models for training design and delivery is likely a byproduct of a) the tight timelines for project completion, and 2) the need to operate with an existing upskilling system, including delivery, policy, and funding infrastructure. While we observed limited innovation in this suite of proposals, it was also the group of proposals that tended to offer the most concrete outcomes and deliverables.

3. Offering mentorship, counselling, and coaching programs and services

Applicants proposed a variety of programs and services that would provide personalized counselling, coaching, or mentorship, primarily to increase employment and career advancement. These were sometimes part of a broader program or initiative but could also be standalone. The interventions ranged from coaching from career development professionals to mentorship from community members (e.g., Indigenous leaders,

experienced entrepreneurs, etc.). Wraparound services or supports - offering comprehensive, non-educational assistance - were often part of these proposals. Wraparound supports were framed as an important component of the interventions developed for populations with higher needs and facing more barriers to workforce participation. These included financial incentives, childcare, transportation, counselling, and mental health support.

Most often the goal of these programs was to increase labour force participation among underrepresented or marginalized groups. They often proposed a holistic approach, with coaches and mentors helping participants with a mix of general employability and 'soft' skills (e.g., business communication, conflict resolution) and life skills (e.g., financial literacy). The scope of the coaching reflected proponents' recognition that providing a broader range of support was needed to help address the confluence of systemic and individual barriers that was limiting participation in the labour market. The outputs of these services varied quite significantly but were often some form of individualized career pathways plan and accompanying set of resources.

4. Adapting and scaling existing training programs

Many projects focused on adapting and enhancing existing programs, including pre-employment programs, leadership courses, and virtual learning platforms. The goals included strengthening training content and expanding to new audiences. Within these goals, we observed three primary sets of adaptations:

- **Enhancing cultural relevance and inclusivity**, with a focus on Indigenous, Black, and newcomer populations, and some proposals focused on disability.
- **Improving accessibility**, like offering formerly in-person only programs online or enabling people to access training content at their own pace to accommodate their other responsibilities more easily.
- **Better leveraging technology.** Beyond using technology to increase accessibility, proponents wanted to use technology to create more engaging and effective content (e.g., using AI to enhance training simulations).

We saw considerable variety in the strength of evidence for a given training program, which was a requirement for FSC's investment in scaling the initiative.

5. Developing "infrastructure" for training (e.g., platforms and hubs)

These proposals focused on developing infrastructure for training delivery, primarily platforms and hubs. These projects generally focused on three goals:

- **Overcome geographical and systemic barriers by offering online content** (e.g., an asynchronous online training program to improve accessibility for remote Indigenous communities);

- **Connect diverse learners and SMEs to tailored resources and jobs** (e.g., a province-wide online platform that connects SMEs and post-secondary institutions to create work-integrated learning opportunities); and
- **Foster continuous learning and professional development within a specific sector** (e.g., an online platform for the mining and fishing industries that identifies skills gaps among workers and provides online training in combination with on-site coaching sessions).

6. Building sectoral "infrastructure" (e.g., new models, frameworks, or networks)

This category focused on building models, frameworks, networks, and partnerships to help the skills development sector take a more coordinated, efficient, and inclusive approach to addressing key challenges. In some cases, these interventions were elements of a broader initiative, while in other cases they were the full focus of the proposal. Sample activities included:

- Developing a new **model or framework** for career development pathways by bringing together multiple stakeholders (e.g., a framework for SMEs to identify their needs and identify partners to help address them).
- Establishing large **research-focused partnerships or coalitions** to address a complex need (e.g., a research partnership to address skills gaps for green jobs).
- **Scaling existing partnerships**, by broadening or diversifying partners, to expand their impact and enhance coordination between different sectors, geographies, or types of partners. For instance, expanding the number of organizations involved in a network to increase the sharing of best practices.
- Building **collaborative networks** and **communities of practice** to share resources, advocate for policy change, and foster alignment on skills needs. For example, ambassador networks to promote programs through word-of-mouth.
- Fostering **co-creation labs and accelerators** to develop innovative solutions (e.g., an accelerator that provides hands-on training and mentorship to underrepresented founders).

In general, these projects were aimed at complex issues involving systemic barriers and requiring collaborative solutions as a result (e.g., addressing multiple barriers to under-representation of various groups in a high-opportunity sector). More tactically, they sought to address 1) fragmentation and siloing in the skills development ecosystem, 2) gaps between what educational institutions offer and what employers need, and 3) the need for new models to prepare workers for an uncertain future (i.e., building resilience). They tended to be highly ambitious projects, but also to have deliverables that were less concrete, practical, or "implementation ready" than the other categories of intervention; we discuss the reasons and implications of this in the following section.

Discussion Questions and Context Considerations

The six core types of interventions we identified align with baseline expectations for a broad-based portfolio of upskilling interventions with a strong research focus. While we can identify certain gaps, like the development of new labour market policies or funding models, these are the traditional domain of government departments, not the researchers and delivery organizations that constituted the vast majority of project proponents.

When digging a little deeper into each suite of interventions, we observe an interesting tension. The training, curricula, and mentorship interventions tend to be very concrete, focused in scope, and quite traditional in design and delivery. While they may address structural or systemic barriers to upskilling, they do so at the level of the individual program participant.

On the other hand, the sectoral infrastructure interventions generally do aim to address structural or systemic barriers. For example, they target reducing system fragmentation to increase access to training opportunities or developing innovative new models for skills assessment. However, these interventions tend to be quite limited in what they deliver "on the ground." The final deliverable for the projects is often a model, framework, or structure for a partnership rather than a full-scale implementation and evaluation. We are not criticizing the proponents of these interventions: the approach represents a very logical response to the tight timelines for project delivery. Proponents are finding ways to start tackling systemic challenges within these constraints. However, there is a risk that the follow-on steps to translate those models and frameworks into concrete programs and outcomes never happens, as it will require the proponents to seek out new partners and new funding sources.

Our review and discussion with FSC experts suggested that - at least in their proposals - proponents were not fully engaging with the existing evidence base related to the interventions that they were proposing. As addressed further in the following section, proponents tended to include a literature review as an early project activity. We might anticipate a stronger grounding of the proposals in the findings of existing systematic reviews and evidence summaries, including those published by FSC.

We believe that adopting a portfolio-based approach to innovation funding, as noted above, could enable longer-term and more ambitious work that also leads to concrete implementation and results. While some funding streams would focus on rapidly addressing tactical needs through new or adapted programming, other streams would provide the timelines required for structural changes. We also believe that there is room for those longer-term funding streams to more deeply engage the policymaking community to ensure that they can inform (and respond to) policy and funding reforms. We invite discussion across sector participants, from funders, to researchers, to delivery organizations, on the

precise shape of a funding structure that would enable ambitious, structural, but also implementation-focused initiatives.

There were further, narrower gaps that emerged from our review:

- While our methods do not enable a definitive conclusion, we observe a potential underrepresentation of soft skills in the focus of research projects, training programs, and curricula development. This aligns with the potential gap in centering the *challenge* of soft skills development described above. While many proponents, alongside FSC and other researchers, acknowledge the increasing demand for soft skills in the Canadian labour market,[7] most relevant proposals have a strong focus on "hard skills." However, we recognize that many such programs do have ancillary or secondary focus on complementary soft skills, so we are not confident in identifying this gap. We would encourage conversation within the ecosystem to understand whether there is a gap, what it looks like, and how it might be addressed through the redesign of funding initiatives.
- We also observe that the innovation-focused interventions (e.g., most in the sectoral infrastructure category) tended to focus more on the development and diffusion of innovative labour market interventions, rather than scaling. Where there is a focus on scale, it is local or regional. We did not identify many large-scale, coordinated efforts to address jurisdictional, sectoral, or institutional silos across the country. For example, we did not identify many projects with a goal of embedding existing interventions into public employment or career services systems.

  We recognize that the *Scaling Impact* funding call addresses a key barrier facing organizations seeking to expand their reach and impact by providing dedicated resources to do so. However, this funding call represented a relatively small proportion of the total proposals (6.5%), which explains why we still observe this overall trend.

What methodologies and/or approaches did applicants propose to develop their interventions?

We created a simple, four-stage framework to describe how interventions are developed, and used this to organize and examine the methods that the sector had proposed for developing their labour market interventions:

1. Problem definition
2. Intervention design
3. Intervention testing and iteration
4. Implementation and sustainability planning

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[7] https://fsc-ccf.ca/research/competency-frameworks-and-canadas-essential-skills/

We used a NotebookLM built on the full database of proposals to identify common methods or approaches that applicants planned to use to develop their interventions. We iterated on the findings using a series of prompts and then manually reviewed and validated key references (see Methodology, above). We also developed an *a priori* list of common or recommended methods (e.g., participatory methods, user testing in design research) to help us further interrogate the Notebook.

Approaches to problem definition

Proponents generated or reviewed three primary types of evidence in defining the problems their projects aimed to solve. The most common approach was **targeted exploratory research.** Proponents frequently referred to some form of needs assessment to develop their problem statement. The common methods included focus groups, interviews, or surveys with industry experts (e.g., employers).

There was also a prominent use of **evidence from previous projects** the proponent had delivered, like the results of an evaluation of a pilot project. This shows the value of continuity and opportunities for repeat funding, which the FSC implemented through its targeted calls for previous funding recipients, *Scaling Impact* and *Driving Insights.*

Proposed projects often started with reviews of academic literature, grey literature, or industry or professional standards documents to identify and refine their problem statements. Within this, reference to systematic reviews and meta-analyses were very uncommon, despite being well suited for the task and an efficient research tool. This gap implies that many proponents may be inefficiently using resources by "reinventing the wheel" and basing their work on suboptimal and/or redundant summaries of the relevant evidence. This gap speaks to silos between the research and evaluation community (both academic and non-academic) and the practitioner or service delivery community. There are distinct organizational cultures in these fields with limited crossover, mitigating the extent to which existing research and data underpins practice. There are certainly excellent and relevant resources, including data sets, systematic reviews, and qualitative research publicly available for informing nuanced problem definitions and intervention designs!

Approaches to intervention design

When developing new interventions, proponents heavily favoured **collaborative and participatory approaches.** Participatory methods were widely proposed to ensure interventions were relevant, equitable, and culturally appropriate, especially when working with Indigenous, rural, or historically marginalized communities. Participatory methods were also common in interventions that addressed the needs of employers, with proponents seeking to understand unmet needs, get feedback on interventions, and establish options for evaluation. These methods were also framed as useful in generating buy-in from key stakeholders and beneficiaries, enhancing sustainability (e.g., involving employers in program design to increase the chance they will continue to use it).

Participatory methods generally fell into three categories:

- **Intervention co-creation and design:** One proposal aimed to co-design and implement a training program for and with newcomers. It went further by proposing ethnographic research methods to assess how best to go about the co-design itself.
- **Stakeholder consultation and feedback:** For example, such as talking circles with Indigenous community leaders.
- **Community-centred research techniques:** For example, one potential project would use a "photovoice" method, where participants use photography and accompanying narratives to document their lived experience to inform the intervention design.

The projects that proposed participatory methods were more likely to be *applied*, focusing on implementation-ready interventions rather than more purely *research* focused projects (e.g., those focused on identifying trends through data analysis). The methods were described as a safeguard to ensure that projects were relevant and appropriate for the populations that would access them. Relatedly, the proposals featuring these methods were more likely to focus on individual-level outcomes and were less likely to be descriptive or diagnostic.

The projects featuring participatory design methods were also more likely to focus on specific populations (e.g., Indigenous communities). They were also more likely to be in rural, Northern, and remote communities. We interpret these trends as a positive sign of the ecosystem's commitment to engaging the perspectives of service users and increasing maturity in applying strong design methods. We would encourage discussion within the ecosystem about how to continue deepening the nature of the engagement with communities and broadening participatory approaches to a wider range of projects. For example, what resources do proponents need to move from engaging under-represented groups in the design of interventions to enabling them to lead the design of those interventions.

Beyond these participatory approaches, proposals frequently cited building on previous initiatives and evaluations and using published theory and evidence (although rarely systematic review or meta-analyses, as noted above). Proponents generally articulated a rationale for their interventions that leveraged existing evidence and suggested a causal logic to their activities. However, much of this thinking appeared to be driven by the structure of the funding calls themselves, as they prompted applicants to explicitly define the challenge they intended to address, outline evidence-based activities to address it, and state what the predicted outcomes would be. Outside of these responses to the structure of the funding call, it was much less common for proposals to describe a full theory of change for their interventions (or include the development or validation of a theory of change as a project activity).   It was not always clear in the proposals that proponents had a fully

developed understanding of how the various elements of a program worked together, and what the intended outcomes would be.

Approaches to intervention testing and iteration

Proponents primarily used collaborative feedback loops and structured evaluation methodologies to test and iterate their interventions. These methods prioritize direct feedback from participants and stakeholders, as well as rapid data collection to enable continuous improvement. The methods fell into four broad categories:

- **Rapid iteration and refinement:** Many projects emphasized quick cycles of testing, learning, and modification, often referred to as "design," "prototyping," or "agile" methodologies.
- **Structured evaluations:** Formal evaluation processes are integrated directly into the intervention delivery to generate actionable insights and inform immediate program changes.
- **Mixed-method data collection:** Interventions were tested using a variety of quantitative and qualitative approaches, focusing heavily on direct feedback from participants and outcome measurements.
- **Co-design and collaborative validation:** Central to participatory approaches, these projects involve stakeholders throughout the iteration process.

Approaches to implementation and sustainability planning

Implementation planning was unsurprisingly focused on activities proposed for the funding period. Proponents' implementation plans were often integrated with testing and feedback cycles. These often involved structured, multi-phase rollouts involving rapid feedback and iteration before progressing with the next phase. In some cases, implementation plans also addressed context and scope for the intervention, which included discussions of factors that could affect the intervention's efficacy or relevance to the intended audience (e.g., geographic, policy, and community factors) once implemented. Some proposals also established formal support structures for stakeholders involved in implementation, including developing communities of practice, embedding evaluation opportunities, and creating fora for feedback from stakeholders.

In planning for the long-term sustainability of their interventions, proponents outlined strategies a) to develop self-sustaining financial models and b) to ensure the long-term viability of interventions (i.e., programmatic sustainability). Strategies to transition from grant funding to self-sustaining financial models included:

- Revenue generation strategies, like tuition or enrolment fees for certificate courses or credentialing programs.

- Transitioning to self-sustaining social enterprises (e.g., a platform in which youth can learn for free, while employers or other organizations pay to use the platform to train their staff and clients).
- Scalable funding mechanisms, like investment from private sector employers.

Strategies for programmatic longevity (i.e., sustainability) focused on building internal capacity within partner organizations, establishing long term networks, and influencing policy. These included:

- Embedding resources and models into other platforms or structures (i.e., content is designed to remain online after the end of the project). This was a common strategy, particularly for projects that aimed to develop a resource of some type.
- Capacity building, such as train-the-trainer models in which partners are trained to deliver the intervention independently.
- Creating ecosystems that institutionalize the partnerships involved in delivering the intervention.
- Influencing policy or informing public systems, such as writing recommendations or advice for policymakers based on the evaluation outcomes. This was a common strategy in projects that had a less explicit or focus on sustainability, typically projects that aimed to provide evidence or a model that external stakeholders should implement. It was often unclear whether these organizations had a concrete approach to translating deliverables like policy briefs into effective policy dialogue or engagements.

Many proposals touched on sustainability as described above, but having an explicit plan was more common for a few specific types of projects, including those focused on: designing or scaling up a physical or digital product or developing a service model for a specific organization. In contrast, projects that focused on generating insight, such as answering a specific research question or writing a report or producing policy recommendations were much less likely to have a plan for how they would generate long-term impact. Also, proposals that were highly contextual and/or tailored to a specific audience tended to have a less explicit focus on sustainability.

Innovation

We used our analysis methods to explore how proponents define and integrate "innovation" in their proposals. We identified four common characteristics of approaches that were described by proponents as innovative:

- **Novelty:** Solutions that are 'new' or offer a unique adaptation of existing concepts or tools to a new context.
- **Problem-solving effectiveness:** Interventions that 'solve problems better' than traditional solutions by being more effective, cost efficient, scalable, or more able to overcome barriers.
- **Technological adoption:** Solutions that use advanced and emerging technologies.
- **Inclusivity or systemic change**: Applying an explicit equity lens, solutions that have historically been de-emphasized within the sector (e.g., community-led solutions and equity-centred design).

Proponents commonly frame innovation as a necessary strategy for solving complex socio-economic challenges, modernizing traditional services, and driving inclusive economic growth. Innovation is seen by the sector as particularly important for industries and organizations that are facing large-scale changes or challenges, such as the oil and gas sector, and those that are operating with limited resources or other constraints, such as small businesses or training institutes serving remote populations.

Applicants talked about innovation primarily in relation to new technology, methods and frameworks, and ways to structure partnerships, organizations, and service delivery. Overwhelmingly, technology was seen as a driver of innovation and played a large role in what proponents viewed and framed as innovative. These proposals often featured AI-powered platforms and tools, AI integration, virtual and augmented reality, and other types of digital platforms such as digital twins. In relation to methods and frameworks, proponents discussed non-traditional learning models, including ways to demonstrate skills and competencies like micro-credentials, and applying proven approaches to new sectors as innovative. Proponents also discussed innovation in terms of how partnerships, organizations, and services were structured and delivered, usually in the context of proposing a new model or approach to collaboration or service delivery.

Employer Engagement

One of the most prominent themes and challenges in labour market intervention design relates to how employers are engaged (or not) by researchers and training delivery organizations. We found that employer engagement was a prominent feature of intervention design and delivery in many proposals. Proponents viewed the primary benefits of engaging employers as ensuring that their interventions were relevant - i.e., addressing employers' actual needs and priorities (e.g., training in-demand skills) - and thus, more likely to be useful and adopted into practice.

Employers were typically involved through:

- **Direct collaboration in program design and development**
    - Co-designing curricula and programs to ensure that they address the competencies and skills employers need.
    - Providing expertise and feedback through surveys, focus groups, and key informant interviews (e.g., one proposal sought to survey SMEs to understand barriers to workforce training).
    - Serving on Advisory and Steering Committees, including one LMI-focused proposal that would have employers sit on a steering committee to "sense check" that the data tools being developed reflect their reality and priorities on the ground.
- Providing **Work-Integrated Learning (WIL) or employment opportunities** (e.g., student placements).
    - Experiential or "hands on" learning was a key approach used in training-focused proposals. Experiential learning was highlighted as a critical component across sectors and included work-integrated learning (WIL) opportunities, internships / paid placements, and job shadowing.
- **Facilitating implementation**, such as pilot testing interventions in their organizations.
- Giving **feedback to assess** intervention materials or impact and identify areas for improvement, for example, validating tools such as the quality of a new training program or credentialing program.
- Participating in **advocacy and awareness campaigns.**
- Participating in **partnerships and networks** that support long-term objectives for an industry or sector, such as those related to representation, and build broad ecosystems.

In some cases, employers were involved as intervention recipients or participants themselves. Often, projects proposed to create resources and guidance for

employers or support them to adopt new technologies or deliver training, such as projects focused on disability inclusion practices. Other types of proposals used a dual-client approach in which interventions were designed to address the needs of both individual workers (or job seekers) *and* employers (often SMEs), considering these together to facilitate better alignment and retention.

SMEs were a key target group for employer-focused interventions. Commonly, these interventions sought to help SMEs with needs related to workforce development and strategic growth, given their limited access to resources. This included interventions to help SMEs identify skills gaps, fund / provide employee training, or increase recruitment and retention.

Proponents identified several common challenges to effectively involving employers in their projects, particularly when the employers were SMEs:

- **Resource and capacity constraints**, such as time and money;
- **Human Resources expertise and management gaps**, as proposed interventions often required dedicated and knowledgeable internal resources to implement the intervention, tool, or strategy; and
- **Logistical difficulties**, particularly related to coordination and communication between stakeholders.

Discussion Questions and Context Considerations

Taking a broad view of how the proponents describe developing and implementing their labour market interventions, we can identify some cross-cutting strengths and potential gaps.

While we observe a relatively broad and consistent application of participatory and collaborative approaches, there are surprising gaps in *who* is engaged. We see very frequent engagement of "end users" (e.g., jobseekers, employees, students), experienced workers, employers, and community organizations. Community members and leaders are also present, albeit less often. Policy makers, regulators, very large employers (e.g., multinational technology companies), industry leaders, and technologists were *much less frequently referenced*. While we recognize that the perspectives of these groups are often *overrepresented* in labour market discourse in general, there are risks to leaving them out of participatory processes. For example, interventions may be less resilient to technological change or industry trends.

While most proposals reference the use of evidence and evaluation in their approach to intervention development, very few proposals directly reference key resources like meta-analyses, systematic evidence reviews, or even FSC reports summarizing key issues.

Instead, many proposals included literature reviews as a core part of their research activities, suggesting some potential overlap or duplication of effort. We are *not* suggesting that these reviews are not ever needed - particularly where existing or highly context-specific evidence does not yet exist - but we encourage funders to consider how well proponents are engaging with the existing evidence base. This could be addressed in the funding calls or through technical assistance for successful proponents. We would encourage discussion across the ecosystem on how high-quality existing evidence can most effectively be identified and mobilized across funded projects. Critically, this effort could help uncover where new evidence reviews (or evidence!) is needed to address the gaps.

Our analysis also suggests an important gap related to how proponents plan for the long-term sustainability and impact of their proposed initiatives. As noted above, while projects focused on product design or ongoing programs tend to prioritize clear and detailed plans for sustainment and long-term impact, projects focused more on research and innovation do not. While one might argue that the short-term nature of the project funding means long-term planning is out of scope, we would argue that it's even more important for proponents to have a vision and plan for how their work will generate impact at scale in the long term.

This final point ties into a broader gap in the use of theories of change or logic models by project proponents. In our experience, these are valuable, broadly applicable tools in ensuring and illustrating how all the elements of an intervention and implementation come together to generate labour market outcomes. We were surprised to find few references to these valuable tools across the set of proposals. We understand that FSC has identified a similar gap and is supporting funded projects with technical assistance to develop their theories of change. Other funders may wish to continue and build on these efforts, requiring and/or supporting proponents in prioritizing a clear theory of change that describes how exploratory research, design, testing, and implementation activities all hang together in addressing the animating challenge.

Considerations and Next Steps

We undertook a novel analysis of responses to the Future Skills Centre's 2024 funding calls to understand what the future skills ecosystem sees as the most pressing issues, and the approaches they favour to address them. This report presents a snapshot of the challenges, interventions, and intervention development methods characterizing the career development ecosystem in 2024. Our findings can inform a wide range of discussions across the future skills sector, from refining funding approaches, to identifying promising new interventions and methodologies, to identifying gaps that policy makers and service providers can fill in the coming years.

In using proposals submitted to the Future Skills Centre in 2024 as the basis for identifying ecosystem insight, our analysis has important limitations. First, the data is inherently structured by the funding calls that participants were responding to, particularly the short timelines for project completion. Second, the text we analyzed were from *proposals* - documents developed to secure funding. Third, despite the significant volume and diversity of the data we used, these proposals are not perfectly representative of the entire ecosystem. We have tried to incorporate these limitations in our preceding analysis and the considerations and next steps set out below.

Overall, we see this report as descriptive, not prescriptive. While we have tried to consistently reflect on the "so what" of our findings, we know that the most valuable use of this insight will come from the sector, not from BIT. We encourage readers to consider and discuss the following questions based on the data we have presented:

- How well aligned are the proposals being submitted to core needs in the current Canadian labour market?

- How can the significant pockets of innovation uncovered in the proposals - and the limits in how these innovations are being applied - be leveraged to improve future funding proposals and projects?

- How can further funding initiatives be refined to address some of the limitations suggested by this analysis, within fiscal and accountability-related constraints?

Based on our analysis, we suggest that funders like the Future Skills Centre and Employment and Social Development Canada (ESDC) consider the following approaches to further initiatives designed to position Canada's labour market for the future of skills:

- Implement a "portfolio" approach that delineates long-term funding streams for innovative projects that address structural and systemic challenges in the labour market *and* shorter-term funding for projects that apply proven models to address well-defined and urgent needs.

- Align expectations related to evidence generation with the structure of the funding calls. For example, if there is a desire for rigorous program evaluation, ensure that there are timelines and infrastructure available for randomized controlled trials with longitudinal data collection.

- Use the topic modelling and AI-assisted approaches we have developed and piloted in this report to conduct ongoing analysis of the proposals being received for each call in near "real-time." This will enable funders to better align the overall portfolio of funded projects to the priorities and interventions they see as the highest priority.

- Proactively solicit feedback from potential funding recipients on how the structure of funding calls may shape their responses. Retroactively, use interviews with a randomly selected subset of 2024 proponents to validate some of the hypotheses forwarded in this report about how the funding structure may have shaped and limited projects, especially in terms of innovation and addressing longer-term, more systemic barriers to a more equitable, efficient, and future of skills-oriented labour market.

- Where available and appropriate, provide more detailed guidance in funding calls on the specific areas of research and development interest that funders have prioritized. This could include specific policy priorities (e.g., development of foundational soft skills that facilitate labour market resilience), specific interventions (e.g., system navigation tools and services for skills development), and research goals (e.g., generalizable evidence on the impact of sustained employer engagement in the development of curricula).

- Help proponents address common gaps in their proposals (and projects). For example, provide experts to help facilitate the development of full theories of change that run from underlying barriers all the way to sustainable impact post-implementation. Or offer resources and consulting support on the use of novel or innovative interventions and intervention development methodologies.

- Help proponents use more advanced participatory methods to engage and empower stakeholders to a greater extent. For example, prompting applicants to re-engage stakeholders throughout the project by making this a default expectation of applications and routine reporting (allowing applicants to "opt out" by providing a rationale for doing so). Consider whether a different funding model or additional resources, such as including a methodological mentorship or capacity building component, would enable community organizations or groups to receive funding to develop and evaluate innovative solutions within their own communities.

We also believe that funding proponents, including researchers and service delivery organizations, could benefit from engaging with our findings. We would encourage them to reflect on the following opportunities:

- Consider how to integrate some of the innovative approaches and the breadth of methodologies flagged in this report into your own proposals.

- Differentiate your proposals by including information and plans that appear to be gaps for many proposals, like long-term sustainability / impact plans.

- Broaden your collaborative methods to include a wider range of stakeholders, including those whose voices are already influential and attended to, like policymakers and large employers. While engagement with end-users and community organizations is critical, adding in these powerful stakeholders may increase the potential for systemic impact.

BIT would be delighted to facilitate and engage in these discussions, clarifying our methodology, findings, and hypotheses as helpful. We believe that broader conversations at conferences and on panels could be complemented with more focused roundtable discussions with funders and key proponent organizations.